Appl. No. 09/601,004
Amdt. dated October 31, 2005
Reply to Office action of June 30, 2005

In the Claims:

Claims 1, 2, 4 are amended herein.   Claims 3, 5, 7 and 8 are canceled.   The remaining claims are not amended.

1.   (currently amended)   A two variable data interpolation system for processing image data, wherein a̶ an image value between a plurality of discrete image data values is interpolated by performing convolution operation corresponding to the plurality of discrete data positioned at equal intervals in a two dimensional space using a sampling function that is differentiable finite times and has values of a local support,

wherein, with letting a third order B spline function be F(t), the sampling function, (H(t), is defined as follows:

$H(t) = -F(t + 1/2)/4 + F(t) - F(t - 1/2)/4$.

2.   (currently amended)   The two variable data interpolation system according to claim 1, wherein the sampling function is a function that c̶a̶n̶ ̶b̶e̶ ̶d̶i̶f̶f̶e̶r̶e̶n̶t̶i̶a̶t̶e̶d̶ is differentiable only once over a whole region.

3.   (canceled)

4.   (currently amended)   The two variable data interpolation system according to claim 3̶ 1, wherein the third order B spline function F(t) is expressed as follows:

$(4t^2 + 12t + 9)/4$; $-3/2 \leq t < -1/2$

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$$-2t^2 + 3/2 \qquad ; -1/2 \leq t < 1/2$$

$$(4t^2 2 - 12t + 9)/4 \qquad ; 1/2 \leq t < 3/2.$$

5.   (canceled)

6.   (previously presented)   A two variable data interpolation system, wherein a value between a plurality of discrete data is interpolated by performing convolution operation corresponding to the plurality of discrete data positioned at equal intervals in a two dimensional space using a sampling function that is differentiable finite times and has values of a local support,

wherein, with letting a third order B spline function be $F(t)$, the sampling function, $(H(t)$, is defined as follows:

$H(t) = -F(t + 1/2)/4 + F(t) - F(t - 1/2)/4$, comprising:

discrete data extracting unit for extracting a plurality of discrete data that exist within a predetermined range around a data interpolating position that becomes an object of interpolation operation;

sampling function operating unit for calculating a value of the sampling function $H(t)$ for each of a plurality of discrete data extracted in this manner, with letting distance between the data interpolating position and discrete data be a t; and

convolution operating unit for obtaining a value of the data interpolating position by performing convolution operation through adding values of the sampling function that are

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calculated by the sampling function operating unit and correspond

to the plurality of discrete data respectively.

    7. (canceled)

    8. (canceled)